

Remarks

Favorable reconsideration of this application, in view of the above amendments and in light of the following remarks and discussion, is respectfully requested.

Claims 1-40 are currently pending in the application; Claims 1-37 having been amended, and new independent Claims 38-40 having been added, by way of the present response. Applicants respectfully assert that support for the changes to the claims is self-evident from the originally filed disclosure, including the original claims, and that therefore no new matter has been added.

In the outstanding Office Action, the disclosure was objected to because of informalities; Claim 9 was objected to because of informalities; Claims 36 and 37 were rejected under 35 U.S.C. § 112, second paragraph; Claims 1-3, 5, 6, 11, 12, and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,043,033 to Fyfe; Claims 13-15, 22, and 23 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,219,991 to Salek-Nejad; Claim 34 was rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,924,262 to Fawley; Claims 18 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Salek-Nejad in view of Fyfe; Claims 24 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,607,527 to Isley, Jr. (Isley) in view of one of U.S. Patent Nos. 3,541,745 or 3,763,609 to Probst¹ (the Probst patents) and further in view of U.S. Patent No. 5,105,944 to Ingalls et al. (Ingalls) and U.S. Patent No. 5,925,579 to Neuner et al. (Neuner); Claims 26 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fawley; Claims 28 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,892,601 to Norwood; Claims 7-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over

¹ Applicants respectfully request the Examiner's clarification as to which of the Probst patents have been used in the rejection of the claims.

Fyfe; and Claims 19-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Salek-Nejad.

Applicants express thanks for the Examiner's indication that dependent Claims 4, 16, 27, 29, 31, and 33 recite allowable subject matter such that the dependent claims, although currently objected to, would be allowable if rewritten in independent form. In response, Applicants have so-rewritten the claims. Applicants have further amended the claims in a non-narrowing manner to avoid potential informalities and to place the claims in better conformity with standard U.S. practice. Thus, Applicants respectfully request the allowance of newly independent Claims 4, 16, 27, 29, 31, and 33, and further respectfully request an updated statement of reasons for allowance based on recitations of the amended claims.

Applicants express thanks for the Examiner's indication that Claims 36 and 37 recite allowable subject matter, such that the dependent claims would be allowable if rewritten in independent form and to overcome the rejection under 35 U.S.C. § 112, second paragraph. In response, Applicants have so-rewritten the claims, overcoming the rejection under 35 U.S.C. § 112 for the reasons discussion in detail below. Applicants have further amended the claims in a non-narrowing manner to avoid potential informalities and to place the claims in better conformity with standard U.S. practice. Thus, Applicants respectfully request the allowance of newly independent Claims 36 and 37, and further respectfully request an updated statement of reasons for allowance based on recitations of the amended claims.

In the Office Action, the disclosure was objected to because of informalities. In response, Applicants have amended the specification and drawings to overcome the objection. Specifically, Applicants have amended the specification to remove the statement "13" on page 19, line 9; have amended Figure 6 as shown in the attached replacement sheet to include reference number 50; have amended the specification to state "FIGS. 7(a) and 7(b)" in place of the previous statements of "FIG. 7," as appropriate; have amended the

specification to state “35” in place of the previous statement of “35a” on page 26, line 17; have amended the specification to state “21” in place of the previous statement of “2” on page 29, line 12; and have amended the specification to remove the statement “10” on page 31, line 17. Thus, Applicants respectfully request that the objection to the disclosure be withdrawn.

In the Office Action, Claim 9 was objected to because of informalities. In response, Applicants have amended Claim 9 in a non-narrowing manner to remove the recitation of “rolling,” and to recite “an overlap portion.” Thus, Applicants respectfully request that the objection to Claim 9 be withdrawn.

In the Office Action, Claims 36 and 37 were rejected under 35 U.S.C. § 112, second paragraph. In response, Applicants have amended Claims 36 and 37 in a non-narrowing manner to recite “a member” in place of the previous recitations of “the column,” as appropriate. Thus, Applicants respectfully request that the rejection of Claims 36 and 37 under 35 U.S.C. § 112 be withdrawn.

In the Office Action, Claims 1-3, 5, 6, 11, 12, and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fyfe. Claims 13-15, 22, and 23 were rejected under 35 U.S.C. § 102(e) as being anticipated by Salek-Nejad. Claim 34 was rejected under 35 U.S.C. § 102(e) as being anticipated by Fawley. Claims 18 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Salek-Nejad in view of Fyfe. Claims 24 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Isley in view of one of the Probst patents and further in view of Ingalls and Neuner. Claims 26 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fawley. Claims 28 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Norwood. Claims 7-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fyfe. Claims 19-21 were rejected under

35 U.S.C. § 103(a) as being unpatentable over Salek-Nejad. Applicants respectfully assert that the amendments to the claims have overcome the rejections for the following reasons.

The present invention is directed to methods for reinforcing a structure with a high-ductility material, configurations for reinforcing a structure with the high-ductility material, cored rolls of the high ductility material, as well as the high-ductility materials *per se*. Independent Claims 1, 13, 24, 26, 28, 30, 32, 34, and 35 each recite the high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete.

Applicants respectfully assert that the claimed features provide numerous advantages. By way of non-limiting example, Applicants respectfully assert that the claimed methods, configurations, and materials can support a load of a structure after rupture of a member of the structure.

Regarding the rejection of independent Claim 1 under 35 U.S.C. § 102(b), Fyfe is directed to a process of improving strength of existing concrete support columns. As shown in the figures of Fyfe, a hardenable, low or non-shrinking liquid material 75 fills an area between a column surface 15 and a membrane 27.²

Applicants respectfully assert that Fyfe does not teach, however, the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claim 1. In particular, Applicants respectfully assert that Fyfe does not state that the liquid material 75 with the membrane 27 is a high-ductility material, and further does not state that the liquid material 75 with the membrane 27 has an initial elastic modulus lower than an elastic modulus of concrete, for example.

Specifically, independent Claim 1 recites “a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete.” Thus, Applicants respectfully

² Column 8, lines 62-64.

request that the rejection of independent Claim 1 under 35 U.S.C. § 102(b) be withdrawn and the independent claim allowed.

Regarding the rejection of independent Claim 13 under 35 U.S.C. § 102(e), Salek-Nejad is directed to a method of externally strengthening concrete columns. As shown in Figure 9, for example, of Salek-Nejad, a strap of reinforcing material is impregnated with a resin before, during, or after completion of, wrapping of the strap around a concrete column to increase the stiffness of the concrete column.³

Applicants respectfully assert that Salek-Nejad does not teach, however, the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claim 13. In particular, Applicants respectfully assert that Salek-Nejad does not state that the strap impregnated with the resin is a high-ductility material, and further does not state that the strap impregnated with the resin has an initial elastic modulus lower than an elastic modulus of concrete, for example.

Specifically, independent Claim 13 recites “a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete.” Thus, Applicants respectfully request that the rejection of independent Claim 13 under 35 U.S.C. § 102(e) be withdrawn and the independent claim allowed.

Regarding the rejection of independent Claim 34 under 35 U.S.C. § 102(e), Fawley is directed to a high elongation reinforcement for concrete. As shown in Figure 2, for example, of Fawley, a reinforcement device in the form of a sleeve or jacket is placed around a primary load-bearing member, and fixed in place by an adhesive.⁴

Applicants respectfully assert that Fawley does not teach, however, the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claim 34. In particular, Applicants

³ Column 8, lines 19-24.

⁴ Column 6, lines 27-31.

respectfully assert that Fawley does not state that the sleeve or jacket is a high-ductility material, and further does not show that the sleeve or jacket has an initial elastic modulus lower than an elastic modulus of concrete, for example.

Specifically, independent Claim 34 recites “a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete.” Thus, Applicants respectfully request that the rejection of independent Claim 34 under 35 U.S.C. § 102(e) be withdrawn and the independent claim allowed.

Regarding the rejection of independent Claim 35 under 35 U.S.C. § 103(a), for the above discussed reasons, Applicants respectfully assert that neither Salek-Nejad nor Fyfe, whether taken alone or in combination, teaches or suggests the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claim 35.

Specifically, independent Claim 35 recites “a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete.” Thus, Applicants respectfully request that the rejection of independent Claim 35 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Regarding the rejection of independent Claim 24, Isley is directed to a method of making fabric reinforced concrete columns. As shown in Figure 2, for example, of Isley, a fabric 54 is dipped in resin 58 for impregnation prior to application on a concrete column.⁵

Applicants respectfully assert that Isley does not teach or suggest, however, the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claim 24. In particular, Applicants respectfully assert that Isley does not state that the fabric 54 with the resin 58 is a high-

⁵ Column 4, lines 34-36.

ductility material, and further does not show that the fabric 54 with the resin 58 has an initial elastic modulus lower than an elastic modulus of concrete, for example.

Specifically, independent Claim 24 recites “the high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete.”

The Office Action relies on the Probst patents, Ingalls, and Neuner in an attempt to remedy the deficiencies of Isley. However, Applicants respectfully assert that none of the Probst patents, Ingalls, and Neuner teaches or suggests the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claim 24.

Thus, for the above reasons, Applicants respectfully assert that none of Isley, the Probst patents, Ingalls, and Neuner, whether taken alone or in combination, teaches or suggests the claimed features recited in independent Claim 24. Therefore, Applicants respectfully request that the rejection of independent Claim 24 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Regarding the rejection of independent Claims 26 and 30 under 35 U.S.C. § 103(a), for the above discussed reasons, Applicants respectfully assert that Fawley does not teach or suggest the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claims 26 and 30. In particular, Applicants respectfully assert that Fawley does not state that the sleeve or jacket is a high-ductility material, and further does not show that the sleeve or jacket has an initial elastic modulus lower than an elastic modulus of concrete, for example.

Specifically, independent Claims 26 and 30 recite “a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete.” Thus, Applicants respectfully request that the rejection of independent Claims 26 and 30 under 35 U.S.C. § 103(a) be withdrawn and the independent claims allowed.

Regarding the rejection of independent Claims 28 and 32 under 35 U.S.C. § 103(a), Norwood is directed to a pole repair system. As shown in the figures of Norwood, an inert hardenable core material 4 is poured between a two-piece sleeve system 3 and a rubber strip interlayer 2.⁶

Applicants respectfully assert that Norwood does not teach or suggest, however, the claimed features of a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete, as recited in independent Claims 28 and 32. In particular, Applicants respectfully assert that Norwood does not state that the two-piece sleeve system 3 with the inert hardenable core material 4 is a high-ductility material, and further does not show that the two-piece sleeve system 3 with the inert hardenable core material 4 has an initial elastic modulus lower than an elastic modulus of concrete, for example.

Specifically, independent Claims 28 and 32 recite “a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete.” Thus, Applicants respectfully request that the rejection of independent Claims 28 and 32 under 35 U.S.C. § 103(a) be withdrawn and the independent claims allowed.

Dependent Claims 2, 3, 5-12, 14, 15, 17-23, and 25 are allowable for the same reasons as the independent claims from which they depend, as well as for their own features. Thus, Applicants respectfully request that the rejection of dependent Claims 2, 3, 5-12, 14, 15, 17-23, and 25 under 35 U.S.C. §§ 102(b), 102(e), and 103(a) be withdrawn and the dependent claims allowed.

Applicants respectfully assert that new independent Claims 38-40 are allowable over the reference of record in the application for reasons similar to those discussed above with respect to Claims 1-37. Thus, Applicants respectfully request the allowance of new independent Claims 38-40.

⁶ Column 6, lines 14-18.

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Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-40 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

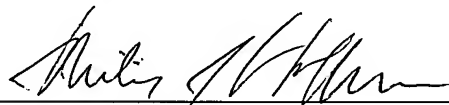
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Respectfully Submitted,

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